JPRS 78961

11 September 1981

East Europe Report

SCIENTIFIC AFFAIRS

No. 714

FBIS FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Indexes to this report (by keyword, author, personal names, title and series) are available from Bell & Howell, Old Mansfield Road, Wooster, Ohio 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

JPRS 78961

11 September 1981

EAST EUROPE REPORT

SCIENTIFIC AFFAIRS

No. 714

CONTENTS

CZECHOSLOVAKIA

Briefs

Nuclear Plant To Provide Heat 1

GERMAN DEMOCRATIC REPUBLIC

Law on Collection, Storage of Radioactive Waste Published
(IWE-TAGESDIENST, 18 Jun 81; GESETZBLATT DER DEUTSCHEN DEMOKRATISCHEN REPUBLIC, 10 Jun 81) 2

West German Commentary
Text of Law

Agricultural, Food Machinery Production Surveyed
(K. Ulrich; AGRARTECHNIK, Apr 81) 7

HUNGARY

Regulators Inadequate Stimuli to Technical Development
(Gyula Szeker Interview; MUSZAKI ELET, 24 Jul 81) 16

ROMANIA

Computerized Planning Systems Designed for Agriculture
(ERA SOCIALISTA, 5 May 81) 22

[III - EE - 65]

BRIEFS

NUCLEAR PLANT TO PROVIDE HEAT--In 1982, work will begin on construction of a 23-kilometer-long heating system for the residential and industrial areas of Trnava. The source of the heat will be the nuclear power plant in Jaslovske Bohunice, whose reactor generates 1,300 megawatts of thermal energy to produce 440 megawatts of electrical power. Thus currently only 30 percent of its thermal energy is utilized; the rest is cooled and then released into atmosphere. The pipeline will form a third cooling circle; the water heated by the nuclear power plant to 150 degrees of Celsius will drop its temperature to 60 degrees after producing heat for the town of Trnava. Even then, it will be sufficiently warm for subsoil heating of vegetable fields. The 240-megawatt thermal capacity of the system should cover Trnava's expected needs in 1990. Since the heat will be received via a turbine, there will be no danger of contaminated water entering residences. The system will be protected against other calamities as well. In the event of a breakdown at the nuclear power plant, the heat transfer stations or the pipeline, heat will be received from the current coal-burning heating plant, which will be kept in reserve. The new project is expected to save 300,000 tons of brown coal, will cost Kcs 350 million and should be completed in 1986-1987. The system would also make technologically possible to heat the nearby towns of Piestany and Hlohovec. [Editorial report] [Bratislava PRACA in Slovak 26 Aug 81 p 4]

CSO: 2402/79

LAW ON COLLECTION, STORAGE OF RADIOACTIVE WASTE PUBLISHED

West German Commentary

Bonn IWE-TAGESDIENST in German No 89, 18 Jun 81 p 1

[Report from Berlin: "GDR Establishes Central Repository for Radioactive Wastes." A translation of the East Berlin GESETZBLATT law cited below follows this commentary.]

[Text] A new order by the East Berlin Office of Atomic Safety and Radiation Protection takes effect on 1 July concerning the central recording and storage of radioactive waste. The final disposal area is Morsleben in Bezirk Magdeburg (near Marienborn); the deposit as such is an underground salt dome. The order obligates all enterprises and institutions, which generate radioactive waste, to collect it, process it, provide intermediate storage, and finally to deliver it to the central terminal disposal area. Complete documentation must be maintained as to the type and quantity of developing atomic waste. For "compelling technical and economic reasons" special regulations with specific time limits may be issued by the central recording and final storage authority. Interim regulations apply furthermore until the final disposal facility is fully operational (GESETZBLATT, I, 16/81).

Text of Law

East Berlin GESETZBLATT DER DEUTSCHEN DEMOKRATISCHEN REPUBLIC in German Part I No 16, 10 Jun 81 pp 224-226

[Official text of "Order on Central Collection and Final Storage of Radioactive Wastes, dated 11 May 1981," signed by Prof Sitzlack, MD, state secretary, president, State Office for Nuclear Safety and Radiation Protection]

[Text] On the basis of Articles 16 and 29 of the 26 November 1969 Radiation Protection Decree (GBL, II, No 99, p 627), the following is hereby ordered for the sake of the safe recording and final deposit, in a manner effective for the national economy, regarding radioactive waste in agreement with the directors of the competent central government agencies and in agreement with the Federation Executive of the Free German Labor Union Federation:

Article 1. Area of Applicability

(1) This order applies to the following:

Government agencies and economy-managing agencies,

Combines, combine enterprises, enterprises and installations (hereafter referred to as enterprises),

which operate nuclear plants, which handle radioactive materials or which operate radiation installations containing enclosed radiation sources.

(2) This order applies to solid and liquid radioactive waste where decay in 200 days, below the boundary values determined by law[1], is not possible.

(3) This order does not apply to the storage of materials and waste materials containing natural radionuclides on dumps and disposal areas[2].

Article 2. Basic Principles

(1) Radioactive waste according to Article 1, paragraph 2, must be recorded and final-stored in a central manner.

(2) The purpose of central recording is the transfer of radioactive waste by the government agencies, economy-managing agencies, and enterprises, where waste develops, in combination with the acceptance of this waste by the enterprise which is charged with central recording and final storage of radioactive waste[3].

(3) The purpose of central final storage is the placement of radioactive waste, to be centrally recorded, in a place for permanent storage under conditions which are suitable for the isolation of radionuclides from the environment until the current values have fallen below the specified boundary values.

(4) In planning, preparing, and executing investments and processes for the operation of nuclear plants or radiation installations, which contain enclosed radiation sources, and in handling radioactive materials, the government agencies, economy-managing agencies, and enterprises must take into consideration the measures required for the collection, processing, intermediate storage, and delivery of radioactive waste to be centrally recorded.

(5) Radioactive substances or radioactively contaminated substances and objects may be turned over as radioactive waste for central pick up and final storage only if there is no further possibility of using these substances or objects or components, if they do not contain any usable secondary raw materials, or if recovery of secondary raw materials can be accomplished only with a heavy expenditure that would not be justifiable in the interest of the national economy.

(6) The yield of radioactive waste must be kept as small as possible. Radioactive waste must be converted into a form permitted for central recording and pick-up through processing[4].

(7) Radioactive waste, subject to central pick up and final storage, must be collected separately from all other waste and must be placed in intermediate storage in the control sector until transfer for central pick-up.

Article 3. Responsibility

(1) The government agencies, economy-managing agencies, and enterprises, where radioactive waste develops, are responsible for the collection, processing, intermediate storage, and transfer of radioactive waste for central pick-up.

(2) The enterprise which handles the final storage of radioactive waste is responsible for accepting radioactive waste for final storage.

(3) Government agencies, economy-managing agencies, and enterprises must carry out those control and safety measures for the collection, processing, intermediate storage, central pick up, and final storage of radioactive waste which will make sure that unauthorized access will be impossible.

Article 4. Documentation

(1) Government agencies, economy-managing agencies, and enterprises, in which radioactive waste develops, must maintain complete documentary evidence on the collection, processing, intermediate storage, as well as transfer of radioactive waste for central recording and pick up. They must guarantee enterprise control over the yield and where abouts of radioactive waste.

(2) The enterprise which handles central pick up and final storage of radioactive waste must maintain complete documentary evidence on the quantity, type, and origin of radioactive waste in final storage. It must assure enterprise control over radioactive waste which is accepted and placed in final storage.

Article 5. Radiation Protection License

(1) Along with the petition for the issue of a radiation protection license, it is necessary, in addition to the previously required documents[5], to submit the following data and evidence for radioactive waste to be handled for central pick-up:

1. Data on the anticipated yield of radioactive waste (quantity, activity concentration, radionuclide composition, chemical and physical properties);

2. Description of installations and plants for collection, processing, intermediate storage, and transfer of radioactive waste;

3. Data on documentary evidence kept regarding radioactive waste as well as on enterprise control and safety measures in accordance with the provisions of Article 3, paragraph 3, and Article 4;

4. Evidence to the effect that radioactive or radioactively contaminated substances and objects or components thereof, which are to be handed over as radioactive waste, cannot be further utilized, do not contain any further useful secondary raw materials, or that recovery of secondary raw materials can be accomplished only with a heavy expenditure that cannot be justified in terms of the national economy;

5. Evidence to the effect that radioactive waste meets the requirements, in terms of shape and properties, as well as the transfer and acceptance conditions;

6. Evidence as to contractual agreements with the enterprise responsible for central recording, pick-up, and final storage.

(2) In case of any intended changes, especially in case of a change in the yield, the type, and the properties of radioactive waste, government agencies, economy-managing agencies, and enterprises must request an amendment in the radiation protection license from the State Office of Atomic Safety and Radiation Protection.

Article 6. Performance Conditions

(1) The requirements regarding form and properties as well as the transfer and acceptance conditions for radioactive waste to be picked up in a central manner are guided by the order to be issued by the minister of coal and energy in agreement with the president of the State Office of Atomic Safety and Radiation Protection.

(2) The central recording, pick-up, and final storage of radioactive substances is connected with mandatory costs. The costs are to be borne by the government agencies, economy-managing agencies, and enterprises in which this radioactive waste develops. The costs are calculated on the basis of the particular applicable price chart.

Article 7. Exceptions

(1) If, for compelling technical or economic reasons, determinations in this order cannot be complied with in individual cases, then a special regulation, with a specific deadline, is to be requested in writing, regarding the intended deviations, from the president of the State Office of Atomic Safety and Radiation Protection by the directors of the government agencies, economy-managing agencies, or enterprises. The petition must contain the following data:

1. Detailed data on deviations from the determinations in this order, along with justifications;

2. Data and justification for duration of validity of special regulation;

3. Data as to how radiation protection and safety in the collection, processing, intermediate storage, and transfer of radioactive waste for central pick-up can be guaranteed through other measures and means.

(2) To the extent that these special regulations touch the task sphere of other central government agencies, they must be made in agreement with the directors of the participating central government agencies.

Article 8. Transition Regulations

(1) Until complete acceptance of the pick up function by the enterprise, which is to handle central recording, pick up, and final storage, the State Office of Atomic Safety and Radiation Protection will also record those radioactive waste items which do not meet the requirements, in terms of shape and properties, as well as the transfer and acceptance conditions for radioactive waste to be centrally recorded. Details on this will be determined by the particular radiation protection permit.

(2) Government agencies, economy-managing agencies, and enterprises, which have a radiation protection license or which have submitted an application for the issue of a radiation protection license, are obligated, directly, but at the latest up to 2 years after the entry into force of this order, to submit data and documentary evidence, in accordance with Article 5, paragraph 1, for the supplementation of radiation protection permits to the State Office of Atomic Safety and Radiation Protection.

Article 9. Final Provisions

(1) This order takes effect on 1 July 1981.

(2) The following are at the same time rescinded:

Article 23 of the First Implementing Regulation of 26 November 1969 for the Radiation Protection Decree (GBL, II, No 99, p 635),

The Guideline for the Central Recording of Radioactive Waste of 28 March 1974 (Communication of the State Office of Atomic Safety and Radiation Protection, 1975, No 5).

FOOTNOTES

1. At this time, Article 22, paragraph 3, of the First Implementing Regulation of 26 November 1969 to the Radiation Protection Decree is applicable (GBL, II, No 99, p 635).

2. Currently, the Order of 17 November 1980 on guaranteeing radiation protection in dumps and industrial waste disposal areas and in the use of materials deposited there is applicable (BGL, I, No 34, p 347).

3. VE Combine Nuclear Power Plants "Bruno Leuschner," final storage operation for radioactive waste, 3241 Morsleben.

4. Currently, the definition according to TGL [GDR norms] 25296/02 is applicable: "Treatment of radioactive waste for concentration of radionuclides in a form favorable for waste deposit and recovery of inactive carrier substance, that is to say, all process steps which are connected with the processing of radioactive waste, such as reduction of its volume, consolidation for the purpose of fixation of radionuclides prior to processing and final storage."

5. Currently, the First Implementing Regulation of 26 November 1969 to the Radiation Protection Decree is applicable (GBL, II, No 99, p 635) along with the Appendix to the 21 June 1979 Nuclear Plant Licensing Order (GBL, I, No 21, p 198).

5058
CSO: 2302/8

GERMAN DEMOCRATIC REPUBLIC

AGRICULTURAL, FOOD MACHINERY PRODUCTION SURVEYED

East Berlin AGRARTECHNIK in German Vol 31 No 4, Apr 81 pp 146-148

/Article by Dr K. Ulrich, engineer, Chamber of Technology, VEB Fortschritt Agricultural Machinery Combine, Neustadt in Sachsen: "Survey of Important Machine Systems for the Agricultural and Food Industries Produced by the VEB Fortschritt Agricultural Machinery Combine, Neustadt in Sachsen"7

/Text7 1. Introduction

The 30 years of development of the VEB Fortschritt Agricultural Machinery Combine are closely linked with the development of user-oriented machine systems for the agricultural and food industries.

While in the first decade following the establishment of the combine first simple, then increasingly more complicated individual machines were developed and produced, the designing of machine systems for GDR socialist agriculture was begun in response to the demand made by the Seventh German Farmers Congress in 1964. With the introduction of industrial production methods in agriculture and the associated concentration and specialization of production, at the beginning of the 1970's there arose the need to develop, as a technical basis of industrial production methods, and to make available comprehensive machine systems which guarantee[1] "the production of an agricultural product, as far as possible, ranging from the first stage of production to processing." In hindsight it can be stated that there are close correlations between the development of machine systems and the social development of the agricultural and food industries. Every stage of development in the socialist agricultural and food industries requires an appropriate technical-technological level of machine systems, whereas the machine systems for their part represent an important basis for the steady further development of this important branch of the economy.

2. Overview of the Machine Systems

By concentrating agricultural machinery construction in the GDR effective 1 July 1978 in the VEB Fortschritt Agricultural Machinery Combine it was established that the following machine systems are the responsibility of this economic unit:[2]

--grain production and processing

--cereal forage production and processing

--potato production and cleaning

--sugar beet production

--cattle production

--pig production

--milk processing

--soil cultivation, tilling, fertilizing, cultivating and crop protection

--tractors and agricultural transport and transshipping equipment.

Moreover, the development, production and sale of important component products, including products such as engines, transmissions, car heating systems, chains, fire extinguishers, consumer goods and so forth, are to be implemented.

By virtue of the above-mentioned systems, the VEB Fortschritt Agricultural Machinery Combine represents the most important machine systems for crop and animal production and for the food industry. Because of the great diversity, the individual machine systems are worked on and completed in extensive national cooperation with production enterprises of socialist agriculture and other industrial branches and as international cooperation or specialization with the CEMA countries.

The machine systems for the GDR agricultural and food industries are developed on the basis of an agreement which was concluded between the MALF [Ministry for Construction of General Machinery, Agricultural Machinery and Vehicles] and the MLFN [Ministry for Agriculture, Forestry and Foodstuffs Industry].[3]

This agreement is the basis of contractually regulated scientific cooperation between the VEB Fortschritt Agricultural Machinery Combine and the GDR ADL [Academy of Agricultural Sciences] and its institutes in order to implement research and development, coordinated in terms of substance and time, of new procedures and machine systems.

With the combine's strong growth in export volume it was necessary in designing the machine systems and the individual machines to consider from the very beginning the requirements of the chief exporting countries and to develop special variants in the machine systems.

By utilizing the high complexity of the machine systems, for example, machine system variants for rice production and processing and grain corn production and processing were developed in the combine for export. Thus, the appropriate export countries also have universal systems at their disposal. Such measures to modify machine systems will take on increasing importance.

Figure 1 provides an overall schematic representation of the machine systems of the VEB Fortschritt Agricultural Machinery Combine. The machine systems for crop production in each case begin with the subsystems for producing the individual products which are intended, via mechanization means, for soil cultivation, tilling, fertilizing, cultivating and crop protection.

2.1 Machine System for Grain Production and Processing

This machine system ranges from the mechanization means for producing grain up to important final products for human nutrition, such as baked goods, foodstuffs, flour and beer. The combine develops and produces complete installations and all important individual products. It is divided as follows into subsystems:

--Grain Production

--Grain Harvest

Harvester-threshers E 512 and E 516 in a large number of export variants, self-propelled forage harvester E 281 and high pressure press K 453 for harvesting straw, coordinated in performance with E 512 and E 516.

--Grain Silo Installation

Complete grain silo installations, in metal for up to 14,400 tons and in concrete for up to 140,000 tons storage capacity; grain dryers, grain cleaning machines, conveyor systems, dust removal systems and other individual pieces of equipment.

--Seed Silo Installation

Complete seed silo installations for up to 8,000 tons storage capacity, complete seed cleaning facilities; seed cleaning machines (sieve sorters, indented cylinders), belt dryers, ventilated metal silos, laboratory machines and other individual machines.

--Wheat and Rye Mill

Complete wheat and rye mills for up to 250 tons per 24 hours processing capacity; double roller frames, sifters, dry stone separators, grain cleaning machines and other individual machines.

--Bakery

Complete lines for producing bread and rolls with a working width of 2.1 and 3 meters; fully automatic machines for dividing and working dough for rolls, intensive kneading machines, cutting machines for baked goods, ovens and other individual machines; dough processing machines from the CSSR and Hungary are integrated into the bread and roll lines.

--Husking Mill

Complete rice mills in frame design for up to 40 tons per 24 hours, oat mills, barley mills, cleaning facilities for legumes; individual machines for husking mills (husking operations, grinding operations, table sorters and others).

--Mixed Forage Works

Complete mixed forage works, from frame design up to large process computer-controlled mixed forage works with 200,000 tons annual processing capacity; pellet presses, hammer mills, batch mixers and other individual machines.

--Malt House

Complete malt houses with an annual capacity of up to 60,000 tons of malt.

--Brewery

Complete breweries of various kinds with a broad assortment of individual pieces of equipment.

2.2 Machine System for Cereal Forage Production and Processing

This includes the mechanization means which are necessary from the planting of cereal forage up to the availability of fresh forage, silage, dry feed, hay and feed pellets. The combine makes this machine system in close coordination with the production enterprises of agriculture and other industrial branches. The machines, which determine output, are produced by the combine. The technological basic quantities are universally coordinated for the machine system. It is divided into the subsystems

--Cereal forage production

--Cereal forage harvest

Self-propelled swath movers # 301 and # 302, including swath processing equipment and mowers for the pea and grain harvest; self-propelled forage harvester # 281 with field forage mower, pick-up machines, corn mowers and corn cutter (Hungary); high pressure press K 453 for hay and straw harvesting, in variants for different kinds of use; rotary mowers for tractors (CSSR).

--Vertical and Horizontal Silos

The subsystem is realized by the Nauen Equipment Combine for Cattle Plants VEB and by enterprises for agricultural construction.

--Drying Works

This subsystem is taken care of by the Stassfurt Chemical Building Plant VEB; the combine produces plant parts, such as the rack press installation, as well as individual machines like hammer mills and pellet presses.

--Storage Rooms and Cold Air Drying Installations

These primarily include storage rooms as a result of agricultural construction, cool air ventilation devices from the Meissen Turbo Works VEB.

--Feed Pellet Plants

Complete feed pellet plants in frame design for processing straw, sugar beet chips, grain, molasses and other components; partial installation for NaOH hydrolizing; special feed presses which process straw and other components; hammer mills.

2.3 Machine System for Potato Production and Cleaning

This includes the mechanization means for potato production up to delivery of packed raw goods or peeled potatoes. Characteristic of this machine system is the long-term specialization by the GDR on potato harvesting machines and by the CSSR on potato planting machines within the framework of CEMA's division of labor.

--Potato Harvest

Potato diggers, two and three row capacity, potato collecting diggers and potato separators for two rows in many variants; potato weed cutters as a cultivating device from Poland; variants of the digger for havesting onions and carrots.

--Potato Cleaning

Complete cleaning, storage and marketing plants for up to 30,000 tons of potatoes, automatic sorting plants to supplement the diggers and other individual machines.

2.4 Machine System for Sugar Beet Production

This includes all the mechanization means which are needed by agriculture, ranging from sugar beet production up to delivery of the harvested sugar beets to the sugar mill.

The high level of specialization in developing and producing the machines in specific CEMA countries is characteristic of this, too. Thus, the CSSR is responsible for the development and production of self-propelled machines for harvesting beet leaves. The USSR is the final manufacturer of self-propelled machines for beet digging. Within the framework of specialization, for the KS-6 self-propelled beet digger the combine delivers the cabin, digging units and conveyor facilities. Single seed sowing machines of various designs are produced as an important final product of the combine itself for this machine system.

2.5 Machine System for Pig Production

This combines the equipment for facilities for pig breeding and fattening. The main part of the mechanization means is developed and produced by the Cottbus Pig Production Equipment Combine VEB. The VEB Fortschritt Agricultural Machinery Combine, on the other hand, produces lines for steaming the potatoes and other equipment and is the general contractor for plants for pig production for export.

2.6 Machine System for Cattle Production

This includes equipment of various cattle production installations for breeding, fattening and milk production for GDR agriculture and export customers.

The combine designs and delivers completed plants for cattle production and efficient individual machines. The machine system for cattle production is realized in close coordination with the Nauen Equipment Combine for Cattle Plants VEB and other enterprises. It is divided in the following subsystems:

--Keeping Equipment

Keeping equipment for breeding, fattening and milk production plants.

--Feeding Equipment

Plants for feed preparation and distribution, even at the location of the animal, mobile feeding equipment.

--Milk Extracting Equipment

Complete plants for obtaining milk, according to the number of animals and stabling method: direct-to-can milking installations, mobile pasture pipe milking installations including machine cars, mobile pasture direct-to-can milking installations, pipeline milking installations, herring bone milking rooms, carousel milking installations. Installations for cooling milk.

--Manure Removal Equipment, Liquid Manure Equipment

Installations to remove stable manure and liquid manure, tractor trailers to transport and distribute stable manure and liquid manure.

--Cleaning and Disinfecting Equipment

Hot water pressure cleaning devices, disinfecting equipment.

2.7 Machine System for Milk Processing

It starts with the mechanization means for receiving the milk and ends with the milk products ready for market, such as drinking milk, cottage cheese, butter and other items. The VEB Fortschritt Agricultural Machinery Combine develops and delivers complete milk processing lines with a handling capacity up to 20,000 liters per hour and individual machines such as separators, plate heat exchangers, cream ripeners, butter machines, cottage cheese separators, pumps of various types. The separators are also utilized, in a modified designed, for many other liquids, such as oils for human nourishment and technical purposes, chemical liquids, beer wort, fruit juices and others.

2.8 Machine System for Soil Cultivation, Tilling, Fertilizing, Cultivating and Crop Protection

This machine system which includes all mechanization means for the production of primary crop products has a cross-sectional character and, with selected mechanization means, is an integrated component in the machine systems for crop production. It is divided into the following subsystems:

Soil Cultivation

Plows of various designs for cultivating the soil, share stubbling plows, grubbers, various kinds of devices for leveling, crumbling and packing the plowed soil, and other devices.

--Tilling

Drill machines with various working widths from 2.50 to 9.20 meters (with coupling car), single seed sowers for sowing sugar beets and other seeds; in the framework of CEMA, Romania is responsible for corn planting machines, the CSSR for potato planting machines.

Fertilizing

Tractor trailers to transport and remove stable manure and liquid manure; truck spreading attachment for IFA W 50 trucks to transport and deliver mineral fertilizers, endgate manure spreaders for tractors.

--Cultivating

Cultivating equipment for use with tractors.

--Crop Protection

In the framework of the international division of labor for CEMA agricultural machinery construction all devices for crop protection are developed and produced by Hungary with consideration of the demands of GDR agriculture. Crop protection machinery, pulled by tractors and mountable on trucks, for the most diverse applications.

2.9 Tractors and Agricultural Transport and Transshipping Equipment

--Tractors

Tractor ZT 300 with a 74 kW engine, in standard design and also all-wheel drive, in many export variants; in line with the division of labor in CEMA, completion of the tractor fleet for GDR agriculture is accomplished mainly by imports from the USSR and Romania.

--Agricultural Transport Equipment

Special trailers for stable manure and other transport goods, tank trailers for liquid manure and other liquid materials; agricultural truck IFA W 50 from the service truck combine, special agricultural tipping trailers from the combine for trailers and special attachments, also with special attachment for trucks and tractors.

--Transshipping Equipment

Mobile cranes and diggers for a variety of uses in agriculture, a broad assortment of conveyor belts, freight car loading equipment, front loaders for tractors, conveyor blowers for grain and cereal.

3. Concluding Remarks

Of the very extensive machine systems taken care of by the VEB Fortschritt Agricultural Machinery Combine, Neustadt in Sachsen, it was possible to give only a concise overview. Increasing importance attaches to the development of machine systems in combination with the development of processes for the agricultural and food industries within the national and international framework.

The machine systems underlie a high dynamic because of the broader horizontal and vertical integration of the labor processes of the agricultural and food industries, the necessary minimizing of energy and material outlay for production and in the use of agricultural equipment, of additional increases in work productivity as well as a decrease in losses and increasing the quality of crop and animal products. The high rates of increase for export which are to be realized in the interest of the economy require, in addition, the development of special variants of machine systems in order to better deal with diverse conditions of use.

The machine systems described for the agricultural and food industries are the basis for designing the reproduction process in the combine, starting with research and development, via production up to effecting the sale and export and import.

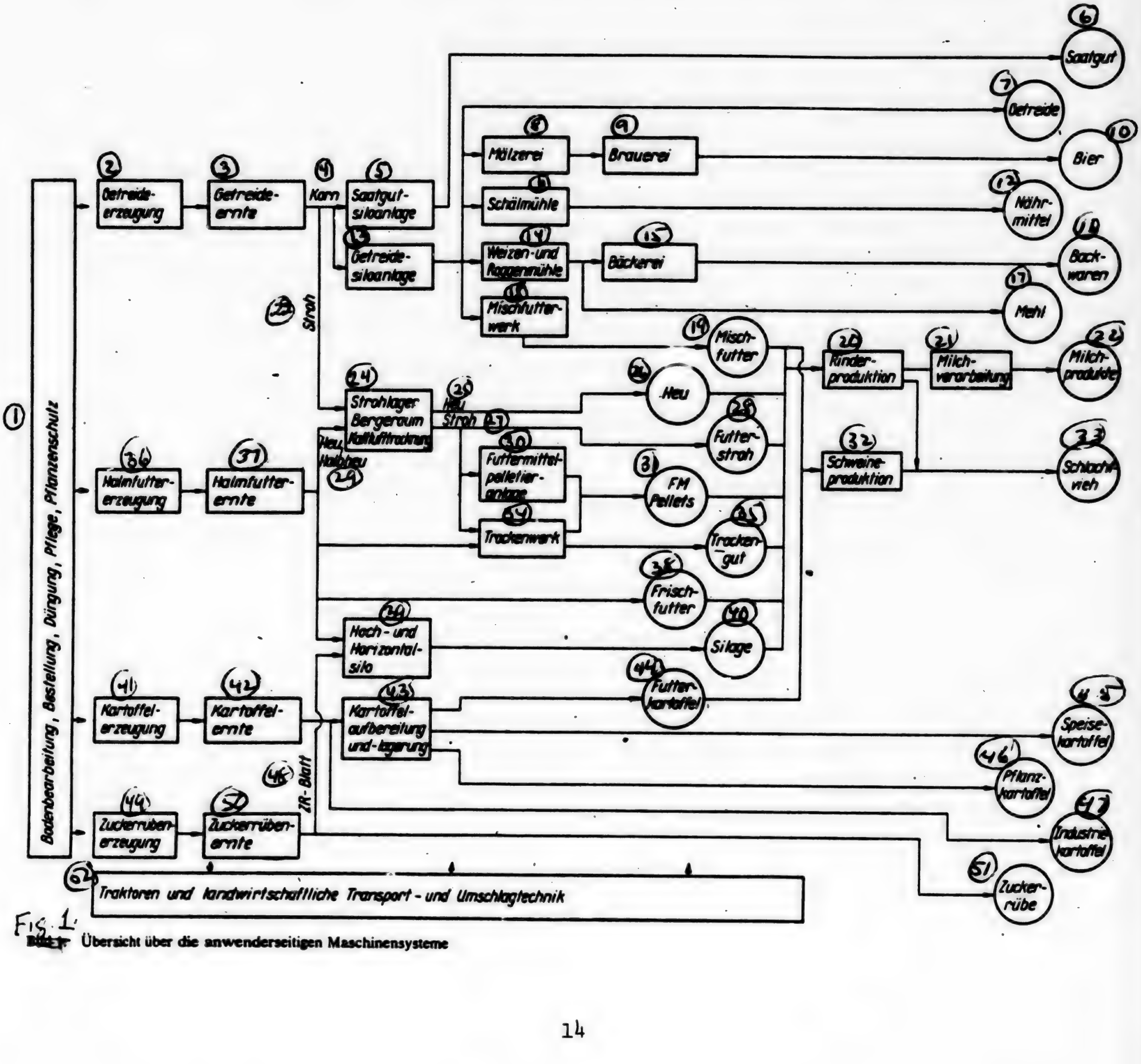

Fig. 1. ~~Bild 1:~~ Übersicht über die anwenderseitigen Maschinensysteme

Figure 1. Overview of Users' Machine Systems

Key:
1. Soil cultivation, tilling, fertilizing, cultivating, crop protection
2. Grain production
3. Grain harvest
4. Grain
5. Seed silo installation
6. Seed
7. Grain
8. Malt hous
9. Brewery
10. Beer
11. Husking mill
12. Foodstuffs
13. Grain silo installation
14. Wheat and rye mill
15. Bakery
16. Baked goods
17. Flour
18. Mixed forage works
19. Mixed forage
20. Cattle production
21. Milk processing
22. Dairy products
23. Straw
24. Straw storage, storage room, cold air drying
25. Hay
26. Hay
27. Straw
28. Feed straw
29. Hay, part hay
30. Feed pellet plant
31. Feed pellets
32. Pig production
33. Cattle
34. Drying works
35. Dry feed
36. Cereal production
37. Cereal harvest
38. Fresh forage
39. Vertical and horizontal silo
40. Silage
41. Potato production
42. Potato harvest
43. Potato cleaning and storage
44. Feed potato
45. Eating potato
46. Seed potato
47. Industrial potato
48. Sugar beet leaf
49. Sugar beet production
50. Sugar beet harvest
51. Sugar beet
52. Tractors and agricultural transport and transshipping equipment

FOOTNOTES

1. Gruenbeberg, G. "What Are Industrial Production Methods in Agriculture?" NEUS DEUTSCHLAND, Vol 26, January 1972, p 3.

2. Bylaws of the VEB Fortschritt Agricultural Machinery Combine, Neustadt in Sachsen, 1 Dec 1979, par 3.

3. Agreement between the MLFN and the MALF concerning cooperation in the sector of research, development and application of machine systems to the comprehensive mechanization of crop and animal production.

12124
CSO: 2302/6

REGULATORS INADEQUATE STIMULI TO TECHNICAL DEVELOPMENT

Budapest MUSZAKI ELET in Hungarian 24 Jul 81 pp 3, 4

[Interview with Dr Gyula Szeker, chairman of the National Technical Development Committee, by Gyorgy Pongracz: "The Basic Task of Technical Development: Improving Competitiveness"]

> [Text] Economic contradictions are sharpening to an increased degree in the world economy today. This process is in a natural causal relationship with the slowing of economic development, which necessarily brings with it ever greater significance for technical development. An innovation centered economic policy having as its goal a continual renewal of the production and product structure is coming to the fore everywhere today, but especially in countries poor in raw materials and fuels. In this changed economic situation the extra profit comes from products which are new by international standards, products which contain a greater proportion of the achievements of science. The changed economic situation is indicated and strengthened by the fact that the 1980's are a new period in the unfolding of the scientific-technological revolution. In this new situation greater value is given to the significance of science and of technical development in our homeland, and throughout the world. So increasing the speed and effectiveness of technical development is becoming a key question.

[Question] How is the Hungarian people's economy preparing for all this?

[Answer] Qualitative changes and a shift of emphasis have taken place in our technical development policy. Research and technical development, which earlier were sometimes goals in themselves, are increasingly intertwined with the market oriented economic activity of the enterprises. The take-over, swift adoption and further development of foreign technical information which is new for us, in the form of licenses, is becoming a significant factor. The enterprises are gradually recognizing that without effective technical development they will be increasingly less capable of keeping up in the sharpening economic competition. But if this change in attitude is to receive greater scope in practice fundamental significance attaches to central guidance and a consistent implementation of a technical development policy conception for the working out of the Sixth Five-Year Plan conception. In this they formulated technical priorities for the Sixth Five-Year Plan which were included in the plan law as follows: "In technical development priority must be given to trends which significantly improve the technical level, quality and economical production of products, which increase the efficiency of materials and energy use, which result in a modernization of technologies including efficient automation and which aid mass manufacture of parts and subassemblies and production of complete industrial technologies and complex systems."

[Question] Economic competition is sharpening and the enterprises are only gradually recognizing this. Are they too slow to do so?

[Answer] The low efficiency of technical development derives primarily from the fact that the economic regulators do not make the enterprises feel the pressure of technical development enough, do not encourage them to undertake the risk accompanying innovation. So we must try as soon as possible to see to it that the regulator system creates an even more favorable atmosphere for technical development, encouraging the enterprises substantially more than heretofore to accelerate technical development. We should not forget that even heretofore we have turned significant sums to research and development, nearly 90 billion forints between 1976 and 1980, and the expenditures in the Sixth Five-Year Plan are expected to come to 3 percent of the national income. The Sixth Five-Year Plan law--in harmony with the economic policy conception approved at the 12th congress of the MSZMP--prescribes the development of a new type of medium range research and development plan for national guidance of research and development. This will provide significant sums from central resources for technical development which can be realized within the enterprise decision sphere, in addition to the programs of national significance.

[Question] So technical development must be realized at every level of economic guidance and such tasks can be well distinguished.

[Answer] Naturally with different contents at different levels, but it is an important activity at the enterprise and state level alike. Each must find their own system of tools and institutions, with special regard to the fact that the scale of those participating in technical development work is very broad and it is difficult to coordinate this extensive activity. An important organizing force is represented by the innovation chain which puts research-development-marketing-application (use) into a uniform system and coordinates the mutual effects of every member of the chain.

[Question] In what areas can we regard our technical development effective?

[Answer] A large part of our research work is of a following character. Experience shows that we have been able to achieve outstanding results where the influence of the market on the producing activity of the enterprise was greater than average, thus influencing research and technical development as well, and where we had well defined, concretely formulated developmental goals and where the realization of these was regulated by centrally organized and guided programs. As examples I might mention the pharmaceutical industry, telecommunications and vacuum technology, the aluminum industry, manufacture of highway vehicles, crop production and certain branches of meat production.

[Question] But this is not at all characteristic in general.

[Answer] It is true that we have not succeeded in raising technical development activity to the desired level on a broad scale. The pace of development is not satisfactory partly because in some extraordinarily important areas--such as microelectronics and the development of biologically active materials, crop protection materials and chemical industry intermediaries--we have not been able to follow the swift technical and scientific development of the world and partly because the backward areas hold back and even drag down the others. The weaknesses of our technical development can be attributed, going beyond the sphere of technical development narrowly interpreted, to economic, social and awareness causes. Our interest system is not an adequate incentive for the realization of new things and our social values in general do not appreciate the search for new paths, being much more inclined to accept comfortable mediocrity. In this area the ability of our society to tolerate tension and conflict is less than could be desired. In accordance with our present attitudes the efforts and risk of innovation work would have to be rewarded primarily with material recognition while comfortable work and avoidance of risk should suffer material disadvantage.

But the income regulation and wage policy principles in effect do not yet make this possible to the desired degree. Recognition proportional to the risk undertaken and the results achieved is not adequately solved for organizations or for individuals. Although we have given up leveling in principle in reality social pressure does not yet permit sufficient scope for differentiation. As I have noted already, the economic regulators in the past decade did not sufficiently force the enterprises to increase productivity and efficiency by accelerating our technical development. It was a serious obstacle that our industrial policy was not implemented consistently. It should have been the task of a comprehensive industrial policy to limit our too broad product scale and improve our inadequate production structure, but this was not accomplished in a worthy manner in a number of branches. Realization was not adequately programmed, not adequately controlled. We might add that cooperation, deliveries and contract discipline among economic organizations and enterprises which were supposed to cooperate were extraordinarily lax; the consequences of violations did not have to be borne by the enterprises and did not endanger the status of their leaders. As a result of all this most enterprises--although they are of small or medium size compared to the international monopolies competing with them--had to build up within their own organization a virtually complete vertical production process, increasing the internal technical development needs of the enterprises, resulting in parallel developments at a number of production units. But the causes for all this must be sought not in the thinking of technical experts but rather in the economic environment which has developed.

[Question] So some elements of the innovation chain are rather far from each other?

[Answer] Yes; indeed, the present organization of the management units of our economy, the separation of production and development, break the innovation chain. Investment, production, marketing and technical development are treated separately in the entrepreneurial process. All this produces a number of conflicts of interest. In essence technical development should be regarded as an economic undertaking being realized in the innovation process. But this presumes that where technical development cannot be based on enterprise initiative or where enterprise interest cannot be developed the state should take upon itself the full or partial designation, organization and conduct of technical development goals and actions.

[Question] To what extent is technical development an enterprise task and to what extent is it a state task?

[Answer] Quantitatively it is an enterprise task to a larger extent and a state task to a smaller extent. Everything which is possible at the enterprise level should be done there, but the solution of many tasks is possible only at the level of state guidance. State guidance should strive primarily to introduce new technology, to organize research and development tasks among branches and to force out the old, organizing programs and actions. One of the tasks of the OMFB is to select for the government, to prepare developmental decisions and to give an opinion on these tasks.

[Question] What resources are available to the enterprises?

[Answer] The most important source for enterprise technical development work is the technical development fund which is generated there and two thirds of which, as a national average, remains there, which covers almost all the technical research and development work which can be done or initiated at the enterprise. The existence of the fund encourages the enterprise to turn sufficient funds to an at least partial financing of medium or longer range technical development problems, despite the still short range interest system.

The other part is provided by state organs guiding the area from the centralized technical development fund. The basic principle is that the activity must be financed, not that the institution should be supported. So in the coming plan period we must think and act a good bit more resolutely than heretofore.

The OMFB--as the organ disposing of a part of the centralized technical development fund, using it in the interest of implementing the technical development policy--is turning increased attention to financial support for medium range research and development programs. These programs aid the achievement of the concrete social and economic (primarily industrial and agricultural) goals of socialist construction; they usually contain complex research and development tasks the results of which can be used primarily in the sphere of material production--thus by the enterprises.

[Question] What investment policy, credit and organizational measures are needed for this?

[Answer] One of the important tasks of investment policy is coordination of general and branch guiding principles for investment goals and technical development. The technical development priorities must be realized in the guiding principles of credit policy and in the system of preferences also. Organizational measures should see to it that our enterprises have the research, technical development and marketing organizations linked to the production and marketing process. The organizational modernization of the network of research institutions should be carried out in such a way that this improves conditions for innovation activity by the enterprises, strengthens the link between scientific research and higher education and reduces the isolation of the research institutes from the producing and marketing enterprises. We should give broad support to the creation of research and production--and even marketing--associations.

[Question] What sort of manpower movement will accompany all this?

[Answer] As a result of changes in the production structure and a greater differentiatoin in the economic achievements of the enterprises, naturally, we must count on an increase in manpower movement also. But this must be done not with administrative measures but rather on the basis of information which takes into consideration the trends of our technical development, with measures serving the retraining and further training of the labor force. We should continue to study the material situation of the technical intelligentsia and the social appreciation of their work. Today this is worse than desired.

[Question] Inventions and innovations are important parts of technical development.

[Answer] The majority of inventions are limited merely to technical improvements and perfections so they can play a role primarily in a dynamic maintenance of the technical level by the enterprises or perhaps in follow-up developments. The smaller part, the inventions of a pioneering character representing new directions in technical development, are those which can represent a significant technical-economic advantage, the possibility of a market break-through and extra profit. The task of the innovation movement is partly to contribute to improving the results of management, to developing more thrifty production involving less expenditure, and partly to increase the active, creative role of the workers in the production process. The number of inventions and innovations created and used can be regarded as small compared to the economic development of our homeland, to the size of the population and to countries at a similar level of development.

[Question] What are the most important tasks?

[Answer] With a correct utilization of the material resources for research and development we must strengthen the effect of science and technology on economic development and increase the contribution of research and development to the creation of national income, the modernization of the production structure and an improvement in the organized nature of the social division of labor. Going beyond material support for stressed research and development and central development programs at the national level and for ministerial programs the OMFB will give precedence in supports to those research and development tasks the results of which will make possible concrete economic exploitation within a short time, to those directed at the solution of scientific and technical problems which require high intellectual preparation and which are noteworthy internationally and to those which will help lay the foundations for social-economic tasks following the plan period.

[Question] What role does our technical development have in improving the foreign economic balance?

[Answer] Improving quality in the broadest sense is of absolute importance. Improving our competitiveness and our terms of trade is possible only with a constant improvement in quality and the technical level. But this may be the result of a longer process and it will require significant intellectual and material expenditures. Among our most important tasks in this area one might mention the use of designs ensuring the technical and economic optimum, increasing quantitative production of structural and other materials which make possible better quality and use of modern technology, improving the production structure, building operations and measurements into technological processes which serve quality control so as to force technological discipline, and the development of measurement techniques.

Naturally all this will require reliable, precise work by people working at every level of production.

[Question] A significant number of enterprises are not yet capable of meeting the high efficiency requirements expressed in world market prices. For the time being they are more concerned with their stability than with the development of longer range innovation plans. For this reason we should ensure over the medium and longer range the conditions for more effective guidance of scientific research and technical development.

[Answer] In the course of planning for the Sixth Five-Year Plan the modifications of the guidance of research and development developed in the desired direction, but to achieve the necessary acceleration we must concentrate our attention and resources on a few critical points. For example, our system of economic regulators should better stimulate technical development and there is need for a determined harmonization of investment goals and of the chief trends of technical development. In the interest of this the technical organs must be included to an increased degree in passing judgment on providing credit and funds for enterprises. Socialist economic integration provides a means to expand markets and production in such a way as to make possible the utilization of developed, highly productive technologies. And by means of capitalist cooperation we can gain access to modern products, manufacturing technologies and methods in such a way as to spare foreign exchange and increase our demanding capitalist markets. By purchasing licenses and know-how it will be possible to take over quickly technologies more developed than our own and more effectively concentrate our own more limited research and development capacity. Thus, in sum, in the interest of development in a good direction we must review and further develop, in harmony with social and economic conditions, the planning practice for scientific research and technical development and the decision making and regulatory system therefor.

Scientific research and technical development have an increasing role in the development of the economy especially under circumstances in which the raw material base in contracting, energy is becoming more expensive, marketing is becoming more difficult and economic growth is moderating. We must use the present period of more moderate economic growth in such a way as to turn greater attention to technical development and to improving the economic structure. In this way we can lay the foundations for later dynamic economic growth.

8984
CSO: 2502/91

COMPUTERIZED PLANNING SYSTEMS DESIGNED FOR AGRICULTURE

Bucharest ERA SOCIALISTA in Romanian No 9, 5 May 81 p 53

[Unsigned article]

The Arad Territorial Computer Center (CTCE), which next year will be 10 years old, has steadily developed its activity; during the last five-year plan its volume of services grew at an annual rate of 40 percent, and its labor productivity increased by an average of 23 percent.

One of the major directions for the Arad CTCE data processing activity has been in the domain of agriculture and the food industry, for two reasons: the importance of these branches in the county's economy, and their lag in information processing development. The Arad CTCE continues to devote attention to these specific local conditions. As a result, during this year as well, the number of planning contracts in agriculture and the food industry continues to exceed 50 percent of all its planning contracts.

In order to appreciate the importance of this orientation, we indicate below some of the achievements obtained in planning and using information processing programs and routines designed for agriculture and the food industry.

1. OPTRET--Effective Optimization of Manufacturing Formulas for Enterprises Producing Feed Blends--is designed for Enterprises for the Production of Feed Blends (IPNC). Basing itself on the raw material stocks available in the unit, the program establishes manufacturing formulas for producing feed blends for all breeds and categories of animals, and for each formula lists the essential characteristics for assuring nutritional elements. This program was implemented at the Arad IPNC, and its economic efficiency is estimated to equal an additional annual production of 3000 tons of feed blends, which in turn represents an additional 16 million eggs or 900 tons of pork meat.

2. OPTRET--a variant for the Timisoara Complex for Pig Raising and Industrialization, which includes in its structure three feed blends plants--differs from OPTRET-IPNC in the manner in which it communicates input data, final lists, and the formula re-optimization algorithm.

3. Another program, named PLANVEG, concerns the territorial distribution of plan tasks for major vegetal crops.

PLANVEG is offered as a planning instrument made available to agricultural directorates for agriculture and the food industry.

The plan indicators issued by the Ministry for Agriculture and the Food Industry (MAIA), regarding the areas covered by vegetal crops, as well as the average productions per hectare of these areas, are distributed over the territory of the agricultural directorate.

PLANVEG is aimed at vegetal crops in the groups: grain to be used as such, leguminous grains, and technical plants.

The product operates on the framework of any organizational structure with four levels. Given the current organizational structure of agricultural directorates, the levels which can be taken into consideration are:

Agricultural directorate;
State and cooperative unified agroindustrial councils;
Land improvements;
Lots.

In terms of the logical succession of problems solved, PLANVEG is composed of the following modules:

A. Economic assessment of agricultural land, using natural and intensified figures of merit for each organizational level;

B. Determination of average possible productions per hectare at each organizational level, as a function of the economic assessment of the agricultural land and of an analysis of dynamic sequences of average productions per hectare and crops, for the longest possible time period;

C. Correlation of average possible productions with the average productions communicated by MAIA, and establishment of a coefficient which expresses the contribution of advanced technologies in achieveing the average productions per hectare requested by MAIA;

D. Distribution of average productions per hectare among the various organizational levels, using a power mathematical function (COBBDOUGLAS) for the average production as a function of the figure of merit;

E. Distribution among the various organizational levels of the areas covered by vegetal crops, by using a linear programming economic-mathematical model.

PLANVEG offers two distribution variants for the areas covered by vegetal crops:

One variant takes into account the present planning methodology, which considers the crop coverage areas communicated by the ministry as compulsory;

Another variant which considers as compulsory only the total production of vegetal crops requested by MAIA.

The PLANVEG program can be applied in Arad County beginning with the 1982 plan year, with an estimated production increase of up to 8 percent through location of vegetal crops as a function of their favorable natural conditions.

4. In 1977, the Arad Aviculture State Enterprise began using a package of programs to select a light breed of chickens.

On the basis of observations and measurements conducted during one year on 20,000 birds, this application automatically calculates average values per bird and families, and selects the most valuable ones on the basis of qualitative criteria. This selection can be carried out on a nine-step value scale, whose final purpose is the reproduction of pure lines and improvements in the performances of their various characteristics.

As a result of the improved selection system, very large economic effects are obtained by populating the farms solely with high productivity birds. Four years of computer assisted selection have resulted in a competitive, high quality biologic material which can be exported.

During these four years, the average weight of eggs has increase by 4 grams, and during controlled periods of 20 weeks in 1977 and 1980, the number of eggs obtained per chicken has increased by ten. This means that the 20,000 laying hens of the Arad farm have produced an additional 500,000 eggs per year, following a four-year computer assisted selection.

The application has also been adapted for the Bucharest Aviculture Central.

11,023
CSO: 2702/23

END

END OF FICHE

DATE FILMED

15 Sept. 1981